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Investigating the relationship between financial inclusion and financial health in South Africa

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Orientation: Financial inclusion (FI) and financial health (FH) are important for the country's economic development, particularly upliftment of people from the lowerend of income distribution.

Research purpose: The study investigated the relationship between FI and FH in South Africa using FinScope data for 2011 and 2016.

Motivation for the study: Whilst there has been an emergence of South African studies on FI, there is a lack of research on FH and its relationship with FI.

Research approach/design and method: FI index and FH index were derived. The study estimates three regressions, the first in which FI is a dependent variable regressed on determinants, the second in which FH is the dependent variable regressed on FI and other determinants, and the third is a bivariate probit regression in which FI and FH are modelled co-jointly.

Main Findings: The proportion of people who were both financially included and enjoyed good FH increased from 45% to 57%. These people were middle-aged white men employed with post-secondary education. The econometric findings also suggested a significantly positive correlation between FI and FH.

Practical/managerial implications: These findings provide valuable information on the design of FI and FH initiatives that specifically focus on the needs of the under-privileged and assist in understanding and making informed decisions on the implementation and provision of appropriate FI and FH measures to targeted individuals.

Contribution/value-addition: This is the first South African study that examined both FI and FH with FinScope data.

Keywords: financial inclusion; financial health; financial development; FinScope; South Africa.

Introduction

Financial inclusion (FI) is associated with uniform availability and use of financial services for all. Financial inclusion attracts global attention largely because of its influence on financial health (FH) of the economy, as well as its capacity to drive growth and sustainability of the country (Kabakova & Plaksenkov 2018). Given that globally 1.7 billion people are unbanked, FI provides the opportunity for both low-income and high-income earners to be integrated into the financial system (Demirguc-Kunt, Klapper & Singer 2017). Therefore, FI is a significant tool for enabling economic development and improving the lives of people around the world (FinMark Trust 2017).

According to the World Bank Global Findex Report (2015), South Africa with a well-structured formal financial sector and population occupies a prominent place with respect to excessive debt levels. Nonetheless, the country is faced with FI difficulties. Moreover, the lack of FI is not limited to vulnerable socio-economic groups or emerging economies, where the problem of access and usage of financial services is most severe (Kabakova & Plaksenkov 2018). Also, South Africa is one of the most unequal countries in the world, with a very high Gini coefficient of 0.67 (Van Schaik Publishers 2021). As the country has a relatively well-developed financial system, FI can be of paramount importance to provide inclusive growth and eliminate inequalities.

Financial education has been identified as a factor that helps improve one's financial well-being. According to Atkinson and Messy (2013), financial education for FI aims at facilitating access, as

well as encouraging the increased use of relevant financial services and products for the benefit of individuals (Atkinson & Messy 2013). Studies show an association between financial literacy and FI. A lack of attentiveness regarding the various types of financial products available, poor knowledge of how these products work as well as their likely costs reduce the FI likelihood. One of the consequences of being financially illiterate is that financial behaviour is not congruent with an individual's overall welfare (Agarwalla et al. 2012). The lack of ability to act in one's best financial interest, lack of planning, investment and savings for the future, as well as high levels of debt are some of the consequences, to name but a few (Hilgert, Horgarth & Beverly 2003; Klapper, Lusardi & Panos 2017).

Access and use of financial instruments have not been regarded as distinct drivers of FH in many models, possibly because the models were developed in high-income countries where access is universal, and thus, not a distinct differentiator (Grace & Rhyne 2020). However, in emerging economies, the spectrum of engagement with financial services is quite broad, and is, thus, more revealing. Furthermore, if FH is measured as an outcome of FI, it should be considered in the model.

Is there a relationship between FI and FH? Grace and Rhyne (2020) highlighted that access to financial products and services, specific financial behaviours and income are the main drivers. Moreover, the Financial Health Network (2019) discovered that in the United States of America (USA), whilst higher income is associated with better FH, there are still many individuals with poor FH at all income levels, whilst some people at lower income levels have good FH. In addition, the Financial Consumer Agency of Canada (2019) reported in its survey that 23% of the variability was attributed to behaviour, 19% to economic factors, 12% each to social and psychological factors, as well as 4% to experience and knowledge. Nonetheless, it is important to understand whether this result holds in lower income countries where a significant share of the population lives at or near basic survival levels. Studies in developing countries found that income explains a relatively great share of the variation in FH. One common critique on the application of FH concepts in developing countries is that the indices track strongly with income but contain little information. In fact, many surveys found income to be significant but far from definitive.

Literature review

Definition of key concepts

Financial inclusion (FI) is defined as the:

> [*S*]tate in which everyone who can use them has access to a full suite of quality services at affordable prices, delivered by a range of providers in a competitive market, with convenience, dignity and consumer protection to financially capable clients. (Center for Financial Inclusion 2016)

However, Matsebula and Yu (2020) defined FI as the non-existence of price barriers in broadly accessing financial services and products.

Financial inclusion is a multi-faceted concept with several nuanced components. There are four commonly used lenses through which FI can be defined in the order of complexity (Alliance for Financial Inclusion 2010; World Bank 2014):

- Access: It reflects the depth of outreach of financial services (e.g. penetration of bank branches, point of sale of devices in rural areas), as well as demand-side barriers that consumers face to access financial institutions (e.g. cost and physical proximity of bank service points like Automatic Teller Machines (ATMs).)
- Usage: It measures how consumers use financial products and services, such as regularity and duration of these products and services over time. Determining consumer usage requires details about regularity, frequency, as well as duration of use. Having access does not imply that everyone will use financial products and services. Thus, not everyone who does not use the products and services is categorised as 'excluded' or 'unbanked' complexity.
- Quality: This dimension evaluates the ability of financial services or products to meet the needs of consumers, the range of options available to them, as well as their awareness and understanding of financial products. Quality indicators include safety, convenience, transparency, product fit, customer protection and financial literacy (Alliance for Financial Inclusion 2019).
- Welfare: It measures the impact that financial products or services have on the lives of consumers, including changes (if any) in consumption, business activities and wellness. It is important to distinguish the role of financial services in consumers' lives, without mistaking it for another concurrent factor, such as increased income (Alliance for Financial Inclusion 2019).

Financial exclusion (FE) stands for the inability of people to access and make effective use of financial services and products that are relevant to their needs and create conditions to lead a normal life (Mccrocklin 2019). Financial exclusion is preceded by social exclusion typically as a result of poverty or belonging to a minority social group, and primarily focuses on the subject of geographical access to financial products and services, particularly banking branches. Financial exclusion is not only about physical access caused by the ever-changing topography of financial products and services but also inclusive of individuals who make limited or no use of these products and services (Leyshon & Thrift 1996). Individuals with access to formal financial services but choose not to use them are voluntarily excluded.

Financial literacy means the ability to make informed and rational judgements when making decisions with regard to management of money (Kempson, Finney & Poppe 2017).

When individuals fail to be have in an economically rational manner, it is assumed that they are financially illiterate or unable to understand and use the available information (Garcia 2013). Financial literacy includes the basic knowledge of financial market, understanding key financial concepts (such as inflation and compound interest) and ability to read and extract information from financial documents (e.g. bank statements).

Financial health means a person's daily systems that help build the financial resilience to weather shocks, as well as the ability to pursue financial goals. It is an assessment of the person's current financial position (Ladha et al. 2017). Financial health is defined around the following fundamental elements:

- How much an individual saves and how much of his or her income goes towards fixed and nondiscretionary expenditure.
- One's capability to fulfil current responsibilities with disposable income and flexibility to do so in future.
- Objective (e.g. one's income level) and subjective (e.g. level of satisfaction derived from financial position) of one's elements that contribute towards one's present financial position.
- The extent to which an individual can meet all of their needs and commitments comfortably and has the financial resilience to uphold it over a long period of time.

The above-mentioned fundamental elements shape the foundation for the measurement indices of FH. In all the above definitions, the perception refers to a state of being and not the behaviours of people, as well as a variety of social and environmental factors that play a role. Kempson et al. (2017) suggests that FH is 'not only determined by behaviours of individuals but also a range of social and environmental factors beyond their control'. These environmental and social factors are conceived as influencing people's attitudes, their biases and behaviours, which subsequently impact their FH.

An individual's FH is the result of a reciprocal relationship between a wide range of elements, which include his or her own contributions and decisions as well as economic status. With regard to the latter, examples include income, accessibility to financial services and social safety nets. The Kempson et al. (2017) model considers socio-economic and psychological factors, financial literacy and behaviours as drivers of FH. In this model, access and usage of financial services are the inputs. The model also considers random course of life as it happens which emphasises that FH measured at any given point reflects an individual's external shocks. Kempson et al. (2017) also recognise the influence of socio-economic background on how people behave, but current economic factors determine the available choices.

Theoretical models

Public good theory

The public good theory of FI argues that the (1) delivery of formal financial services to the general population and (2) ensuring that there is unlimited access to finance for everyone should be treated as a public good in the interest of all individuals. As a public good, members of the population cannot be excluded from using formal financial services and cannot be excluded from gaining access to financial services. Access to financial services to one person in no way reduces its availability to others, meaning that every individual can be introduced into the formal financial sector and every person will be more fortunate. This theory suggests that all individuals will benefit from FI regardless of the social status or level of income. This indicates that both the rich and the poor, the financially included individuals and the financially excluded individuals will enjoy the benefits of FI (Ozil 2020).

Financial literacy theory

Financial literacy theory of FI states that FIought to be achieved through education that increases the financial literacy of individuals. This theory argues that financial literacy will increase an individual's desire to participate in the formal financial sector. One of the merits of financial literacy is that it can make people aware of financial products and services that are at their disposal. When individuals become aware of existing financial products and services that can improve their welfare, they will be encouraged to participate in the formal financial sector by opening a bank account, etc.

Furthermore, through increased financial literacy, individuals can make the most of other benefits in the formal financial sector, such as investment and mortgage products. Finally, financial literacy can contribute to individuals being self-sufficient and have some balance in their personal finance by helping them differentiate needs and wants, creating and managing a budget and equipping them to save to pay their bills when due and to plan for retirement.

Vulnerable group theory

The vulnerable group theory of FI argues that FI activities or programmes in a country should be focused on vulnerable individuals, such as poor people, the youth, women and elderly people who bear the brunt from economic difficulties and crises. Vulnerable individuals are often the most adversely affected by financial crises and economic difficulties; therefore, it is logical to bring these vulnerable people into the formal financial sector. The theory makes an effort to reduce the FE challenge by targeting vulnerable individuals for FI. Vulnerable individuals can be identified by their degree of vulnerability, level of income, sex, age and other demographic characteristics (Ozil 2020).

Review of past empirical studies

In this section, the past South African empirical studies are reviewed first. Barnard (2016) examined the impact of income, FH and personal characteristics on social cohesion (SOC) using a secondary dataset. The analysis of variance and trend tests found a significantly positive relationship between income and SOC, but did not find any significant relationship between FH and SOC. Also, people with low SOC presented more indebtedness and less financial planning behaviour than those with high SOC in both high- and low-income groups. The findings suggested that one cannot assume high-income earning individuals experienced higher levels of FH.

Matsebula and Yu (2020) examined the levels and trends in FI using data from the first four waves of the National Income and Dynamics Survey (NIDS) data. The researchers used the principal components analysis (PCA) method to derive a financial inclusion index (FII) by taking 13 variables into consideration (e.g. bank account, credit card, stocks and shares and home loan or bond). Ordinary least squares (OLS) and probit regressions were conducted to examine the impact of the personal- and household-level characteristics on the FII and probability of complete FE, respectively. The findings indicated that households headed by older and more educated people were associated with significantly higher FII, whilst black-headed small-sized households living in rural areas in Eastern Cape, Limpopo and KwaZulu-Natal with lower per capita income suffered a significantly greater likelihood of complete FE.

An analysis of indebtedness and over-indebtedness in the Southern African Development Community (SADC) region was conducted by Finmark Trust (2017) using the FinScope data. The following conclusions were drawn from the study: South Africa stood out in terms of the number of institutions from which individuals could borrow money. People in majority of the Southern African Development Community regions took loans from a single source, whereas a quarter of South Africans simultaneously took loans from two sources. These findings suggested a higher propensity of South Africans to take out loans given the more easily available credit. The results also indicated that over-indebtedness was not necessarily related to either formal or informal lenders. In South Africa, formal credit was accessed by individuals who were financially literate and earned high incomes, whilst informal credit was accessed by people with the opposite characteristics.

Ardington et al. (2004) examined FI in South Africa with specific focus on three aspects, namely savings, insurance and indebtedness. The study found that in 2002, 8% of adults in the lowest Living Standards Measure (LSM) decile owned a bank account, whereas this share was 91% for the highest LSM decile. This finding was expected as access to commercial banks was mostly restricted to salaried workers in higher LSM deciles; however, those in lower LSM deciles were excluded. Access to formal financial services was virtually non-existent amongst rural residents; however, a significant factor that prevented poor people from accessing financial services was distance and costs attached to it. Moreover, in lower income categories, household debt was primarily sourced from retail institutions, furniture stores and family. The latter finding implies that poorer individuals contracted significant amounts of debt at a high interest rate on consumable goods. On the contrary, higher income households incurred debt primarily for the accrual of assets.

Nanziri (2017) analysed FI and well-being by constructing an asset index and deriving self-reported well-being (SWB) level using are centred influence function decomposition approach. Using the SWB measure, there was a small difference between the welfare of financially included and excluded people. However, wealth disparity was significantly greater in the middle- and topend than lowerend of welfare distribution. Also, the distribution of SWB was highly skewed to the right, whilst that of wealth was highly skewed to the left.

Mhlanga, Dunga and Moloi (2021) investigated the drivers of FI in South Africa by focusing on factors that influenced ownership of an investment account. Using the 2018 General Household Survey (GHS) data, the authors conducted a logistic regression model, and found that age, race, educational attainment, marital status and total salary (as proxy of total income) were positively related to FI.

Moving on to international studies, those that examined FH and/or its relationship with FI are discussed below. Firstly, the Toronto-Dominion bank (2019) investigated FH in Canada, and the findings revealed that 27% of Canadians were financially healthy, whilst 39% struggled with some or all aspects of their finances. Moreover, 18% of individuals with high annual income suffered below-average FH; this result suggests that high income did not necessarily translate to sound financial habits.

FinAccess (2019) derived a FH index in Kenya based on the following three categories: day-by-day management, the ability to invest in livelihoods and future, as well as the ability to cope with risk. The findings indicated that the better-off segments of population scored higher, on average, in this index, compared with the poorer segments. Furthermore, the number of financially healthy adults declined during the 2016–2019 period, even though access and usage of financial products and services increased (FinAccess 2019).

The 2019 Brockland et al. (2019) study also derived a FH index in the United States by considering eight indicators from four dimensions (spending, saving, borrowing and planning) and adopting the PCA method. Overall, only 29% Americans were deemed to be financially healthy in 2019 (a negligible increase from 28% in 2018). Moreover, low-income individuals experienced some FH gains, whilst middle-income individuals rather showed signs of increased financial vulnerability.

To conclude, whilst the local studies examined FI, they hardly examined FH and the relationship between FI and FH. However, there were international studies looking at FH, but they also did not investigate the relationship between FI and FH in great detail.

Methodology

This study aims to examine the relationship, if any, between FI and FH in South Africa from 2011 and 2016. More specifically, the study examines the impact of FI on FH, and the extent to which individuals benefit from the relationship between the two variables in relation to the overall financial system. The following hypothesis was formulated:

- Null hypothesis 1 (H_0): Demographic factors and contextual factors do not have an impact on FI.
  Alternative hypothesis (H_1): Demographic factors and contextual factors have an impact on FI.
- Null hypothesis 2 (H_0): Demographics factors, contextual factors and FI do not have an impact on FH.
  Alternative hypothesis (H_2): Demographic factors, contextual factors and FI have an impact on FH.
- Null hypothesis 3 (H_0): There is no co-joint effect between FI and FH.
  Alternative hypothesis (H_3): There is a co-joint effect between FI and FH.

The study will conduct numerous descriptive statistics and econometric analysis. With regard to the former, we begin with a profile of survey participants, before we examine the key findings on the key indicators of FI and FH. The PCA approach is used to derive the FII and financial health index (FHI) using the aforementioned indicators.

To address the formed hypothesis above, the study employs the PCA method to derive the FI and FH indices. Furthermore, the study estimates three regressions, the first in which FI is the dependent variable regressed on determinants, the second in which FH is the dependent variable regressed on FI and other determinants, and the third is a bivariate probit regression in which FI and FH are modelled co-jointly.

Principal component analysis is a statistical data reduction method to convert a set of observations of correlated variables into a set of values of linearly uncorrelated variables (Datta & Singh 2019). The PCA approach transforms the impact of a relatively large number of possibly correlated variables into a smaller set of uncorrelated factors. The number of principal components is fewer than or equal to the number of original variables. Given that various indicators are involved in each category of FI, application of the PCA is suitable to derive a single index reflective of overall FI (Datta & Singh 2019).

One advantage of PCA stems from quantifying the importance of each dimension to describe the variability of a dataset (Shlens 2009). The PCA can also be conducted to compress data by reducing the number of dimensions without incurring significant loss of information. The first component recovers the maximum amount of variance from the original variables, whilst the second component is not correlated with the first component. Hence, if the correlation between the first and second components is calculated, this correlation is zero (Sabău-Popa et al. 2020). After determining the number of main components to be included for the analysis, a matrix of factors for the resultant principal components is calculated. This matrix factor is important as its elements (or factor loading) represent the correlation coefficients between the original variables and principal components (Saporta & Stefanescu 1996).

In equation terms, the first principal component is expressed as follows:

$$P_1 = \sum_{i=1}^{n} a_i X_{1i}, \quad \text{[Eqn 1]}$$

where

$$a_i = \frac{\sum_{i=1}^{n} r_{x1xi}}{\sum_{i=1}^{n}\sum_{j=1}^{n} r_{xjxi}}, \quad \text{[Eqn 2]}$$

where

$$P_1 = \sum_{i=1}^{n} a_i X_{1i} \quad \text{[Eqn 3]}$$

stands for the principal component and

$$\frac{\sum_{i=1}^{n} r_{x1xi}}{\sum_{i=1}^{n}\sum_{j=1}^{n} r_{xjxi}} \quad \text{[Eqn 4]}$$

the sample variance of linear combinations of the indicators, which take the sample variances of the indicators, as well as sample of covariances across indicators into account.

The study will apply the PCA method to derive the FII by considering the key indicators from all four dimensions (access, usage, quality and welfare) of FI. Similarly, the PCA method will be applied again to derive FHI by taking into consideration the key indicators from the spending, borrowing, saving and planning dimensions. Both indices can take positive or negative values, but the mean is equal to zero. In addition, this study adopts the relative approach to assume that in 2011, the FII at the 40th percentile is used to distinguish the poorest 40% (financially excluded) from the remaining 60% (financially included) before this 2011 40th percentile. FII is used again in 2016 to distinguish the two groups. The same relative approach is adopted again when using the 2011 40th percentile FHI to identify people with poor FH from those with good FH.

For the econometric model, bivariate probit regressions are run to investigate the impact of various explanatory variables (age, race, gender, labour market status, educational attainment, marital status, province and area type) on the

probability of FI, as well as the likelihood of having good FH. Both FI and FH statuses are binary regressands and may not be independent of each other. Also, drivers of FH include qualitative information in the form of dummy variables. Moreover, FI is both an exogenous and endogenous dummy variable. In this case, bivariate probit models would be most suitable as they allow for interdependence (Chisadza 2015).

Therefore, the model is expressed as follows:

$$FH_t = \beta X_t + \delta FI_t + \varepsilon_t \quad \text{[Eqn 5]}$$

$$FI_t = \gamma H_t + \mu_t \quad \text{[Eqn 6]}$$

$$E(\varepsilon_t) = E(\mu_t) = 0; var(\varepsilon_t) = var(\mu_t) = 1; cov(\varepsilon_t, \mu_t) = p, where\ p \neq 0. \quad \text{[Eqn 7]}$$

FH_t measures indicators of good FH (1: good FH; 0: poor FH), X and H represent the above-mentioned explanatory variables, which help to determine FH status as well FI status (1: financially included; 0: financially excluded), respectively. In addition, β and γ stand for parameters of the equations; finally, ε_t and μ_t are the error terms.

Whilst there may be correlation between the error terms of the above two equations, both equations might have unobserved variables in common, which in turn affect both outcomes (Cotei & Farhat 2011). If error terms in these two equations are correlated, the bivariate regression model would yield more efficient coefficient estimates than those derived from two different univariate probit regression models. However, one drawback of the bivariate probit model is that it can only derive coefficients but not marginal effects (Chisadza 2015).

Next, the FH probit regressions are run by including FI status as an additional explanatory variable to investigate the relationship between FI and FH. In equation terms, it means:

$$\begin{aligned} Prob(Good\ financial\ health) &= \beta_0 + \beta_1 Age + \beta_2 Race + \beta_3 Gender + \beta_4 Education \\ &+ \beta_5 EmployStatus + \beta_6 Marital + \beta_7 Province \\ &+ \beta_8 GeoType + \beta_9 (Financially\ included) + u. \end{aligned} \quad \text{[Eqn 8]}$$

Data

This study will use the 2011 and 2016 FinScope survey data. FinScope has been developed by FinMark Trust to address the need for credible information on the financial sector. It is a nationally representative study of people' perceptions of financial products and services, and issues which create insight on how people source their income and manage their financial livelihoods (FinMark Trust 2016). The FinScope South Africa survey provides a complete understanding of how people generate income and manage their financial lives. Furthermore, information captured from the survey helps to identify factors that drive financial behaviour as well as factors that prevent people from using the relevant products and services.

On FI, FinScope examines the usage and demand for financial services (including both formal and informal products) by means of questionnaires and interviews, which cover attitudes, behaviours, quality of life factors, as well as consumption patterns. Also, it identifies factors that impede and facilitate effective access to financial products and services. The Statistics South Africa surveys and South Africa Demographic and Health Survey (SADHS) did not ask in-depth questions on FI and FH, whilst NIDS only asked questions on usage of financial products and services. In contrast, FinScope asked more comprehensive questions on all four key dimensions of FI, and for this reason, the study will focus on these key dimensions when deriving the FII as discussed earlier. Regarding FH, FinScope asked relatively more comprehensive questions on the spending, borrowing, planning and saving dimensions of FH.

Empirical findings

Profile of final sample

As presented in Table 1, demographic statistics of the survey participants are summarised. Regarding the age cohort variable, those aged 16–25 years accounted for over 30% of all survey participants (2011: 31%; 2016: 39%), followed by people aged 26–35 years (about 27% share in both years). In relation to gender, the female share was more dominant in both 2011 (52%) and 2016 (58%). As expected, Africans accounted for the greatest racial share of the participants at about three quarters. With regard to educational attainment, slightly more than 70% attained secondary education, whilst only about 12.5% had tertiary qualification.

Looking at other results in Table 1, it is encouraging to see that the proportion of employed increased from 42% to 59%, whilst the unemployed share dropped from 32% to 19%. As far as the marital status is concerned, those who were single or never married accounted for the highest share (2011: 57%; 2016: 44%). Finally, the urban share was most dominant (over 65% in both years), whilst Gauteng and KwaZulu-Natal accounted for the greatest provincial shares.

Financial inclusion dimensions and financial inclusion index

The overall banking status for the chosen population is outlined in Table A1. The results indicate a significant decline in individuals who were unbanked from 33% in 2011 to 11% in 2016. Furthermore, the banking status showed a significant increase in individuals who had any type of account in a financial institution (2011: 62%; 2016: 84%).

TABLE 1: Demographic statistics of the final sample (%).

Dimension	2011	2016
Age cohort (years)		
16–25	31.07	38.49
26–35	27.16	26.58
36–45	19.10	18.75
46–55	12.48	11.63
56–65	10.18	4.55
Total	100.00	100.00
Gender		
Male	47.68	42.40
Female	52.32	57.60
Total	100.00	100.00
Race		
African people	77.77	74.02
Mixed race people	9.63	10.08
Indian and/or Asian people	2.76	3.34
White people	9.86	12.57
Total	100.00	100.00
Educational attainment		
No formal education	3.01	1.71
Primary education	10.55	11.34
Secondary education	71.62	72.45
Vocational/specialised training/other	2.59	1.97
Tertiary education	12.23	12.53
Total	100.00	100.00
Labour market status		
Employed	42.48	58.69
Unemployed	31.87	19.15
Economically inactive	25.65	22.16
Total	100.00	100.00
Marital status		
Married/living together	34.42	39.57
Divorced/separated	3.66	4.60
Widowed	4.55	12.06
Single/never married	57.35	43.76
Do not know	0.08	0.08
Total	100.00	100.00
Geotype		
Urban	66.74	72.70
Rural/tribal	33.26	27.30
Total	100.00	100.00
Province		
Western Cape	10.81	13.89
Eastern Cape	13.16	11.45
Northern Cape	2.09	6.98
Free State	5.45	10.15
KwaZulu-Natal	20.76	14.72
North West	6.55	8.39
Gauteng	23.90	19.00
Mpumalanga	7.40	7.77
Limpopo	9.87	7.68
Total	100.00	100.00

Tables A1–A4 in the Appendix present the descriptive statistics in connection with the indicators from the four dimensions of FI, and the key findings are briefly discussed here. For the access dimension (Table A1), the most encouraging finding is the 21.6% point increase in the proportion of people who had a bank account or bank card (2011: 62.6%; 2016: 84.2%). However, one of the great concerns was the increase of proportion of people who found the language confusing (2011: 41.2%; 2016: 59.0%).

With regard to the usage dimension (Table A2), it is obvious that bank account or card, funeral cover and insurance policy are the most used products and services. However, for the quality dimension (Table A3), the 'yes' proportion for all four reasons to never having or used a bank account or card was very low in both survey years. Finally, the results on the welfare dimension (Table A4) indicated that there was a decline in the share of individuals who ensured that they were financially secure (2011: 35.3%; 2016: 30.4%). However, there was a decline in the proportion of people who felt stressed to deal with personal finances (2011: 52.7%; 2016: 45.3%), as well as in the share of people who liked to be in control of their finance and money matters (2011: 67.6%; 2016: 42.6%).

The first principal components for deriving the FII are shown in Table 2. The following dummy variables are associated with the greatest component value in both years (slightly above 0.3) – Overall banking status: have a bank account or bank card, used a bank account/card, having an insurance policy and having a retirement or pension fund. Also, about 16% of the variation was explained by the first principal components in 2011 before dropping to 13% in 2016.

Financial health dimensions and financial health index

The descriptive statistics of indicators relating to the four key dimensions of FH are presented, as shown in Tables A5–A8 in the Appendix section. Overall, the spending behaviour (Table A5) improved between the two survey years, because the proportions of people who agreed to each of the four problems as shown in the table all declined. The greatest decline happened to the 'missed or made late payments' and 'having problems to make ends meet' indicators (almost 8% points decline). For the borrowing dimension, one of the key results that stands out is the drastic decrease in the share of people who borrowed in the past year (from 21.4% in 2011 to 5.4% in 2016); this finding implies improved FH.

For the results relating to the saving dimension, Table A7 shows that 'in case of an emergency or unplanned cost' remains the primary reason for saving. In fact, the proportion of people who indicated it was the reason for saving was the highest in both years and showed the greatest increase (2011: 14.2%; 2016: 28.2%). Finally, regarding the planning dimension, the results in Table A8 suggested that only about 20% had pension fund, provident fund or retirement annuity in 2016 (as proactive planning for financial survival after reaching the retirement age), and only about one-third reported that they ensured they were financially secure.

As illustrated in Table 3, the first principal components for deriving the FHI are discussed. The results, in general, align with the descriptive statistics in Tables A5–A8. In absolute terms, these dummy variables had the greatest principal component value (at least 0.3): reason for saving: retirement or old age, household contents or possessions

TABLE 2: First principal components for deriving the financial inclusion index.

Dimension	2011	2016
Access dimension		
Overall banking status: have a bank account or bank card	0.3106	0.3139
Overall banking status: used to have a bank account or card in the past	-0.0918	-0.1896
Never had or used a bank account: No proof of residence	-0.0459	-0.0406
Never had or used a bank account: Bank is too far	-0.0315	-0.0406
Never had or used a bank account: No identity document	-0.0441	-0.0437
Never had or used a bank account: Too expensive to have a bank account	-0.0461	-0.0793
Never had or used a bank account: Have access to someone else's account	-0.0392	-0.2183
Never had or used a bank account: Unemployed or retrenched	-0.1614	-0.0062
Never had or used a bank account: Still a student	-0.1205	-0.0807
Never had or used a bank account: Prefer dealing with cash	-0.1061	-0.0286
Find the language used in financial paperwork confusing: Agree	0.1141	-0.0667
Find the language used in financial paperwork confusing: Neither agree nor disagree	-0.0041	0.1204
Usage dimension		
Used a bank account or bank card	0.3142	0.3327
Used a credit card	0.2325	0.2555
Used overdraft facility	0.1704	0.1941
Used a bank loan	0.2813	0.2413
Used a funeral policy offered by a bank	0.2165	0.1833
Have borrowed in the past 12 months	0.1819	0.1131
Have an insurance policy	0.3303	0.3382
Have medical aid or medical expenses	0.2847	0.2778
Used a funeral cover	0.2461	0.1702
Have a retirement or pension fund	0.3125	0.3105
Currently save money	0.2558	0.2500
Quality dimension		
Do not understand how banks work	-0.0366	-0.0361
Do not feel comfortable in a bank	-0.0260	-0.0367
Do not understand technology	-0.0327	-0.0300
Do not qualify to open an account	-0.0655	-0.0532
Welfare dimension		
Dealing with finances is stressful and a real burden: agree	0.0278	-0.0515
Dealing with finances is stressful and a real burden: neither agree nor disagree	0.0108	0.1075
Like to be in control of finances and money matters: agree	0.1444	0.1979
Like to be in control of finances and money matters: neither agree nor disagree	-0.1076	0.0580
Ensured you are financially secure: agree	0.1578	0.1087
Ensured you are financially secure: neither agree nor disagree	-0.0358	0.0859
Proportion of variation explained by the first principal components	15.62%	13.06%

TABLE 3: First principal components for deriving the financial health index.

Dimension	2011	2016
Spending dimension		
You often miss or make late payments for things like rent or municipality bills or loan repayments: agree	0.0298	0.0549
You often miss or make late payments for things like rent or municipality bills or loan repayments: neither agree nor disagree	0.0041	0.0442
You frequently have problems making ends meet: agree	-0.0529	-0.0898
You frequently have problems making ends meet: neither agree nor disagree	-0.0267	0.0225
You have considered going to see someone to help you with your debt problems: agree	0.0089	0.0611
You have considered going to see someone to help you with your debt problems: neither agree nor disagree	-0.0369	0.0452
You have considered cancelling policies to cover debts: agree	0.0162	0.0687
You have considered cancelling policies to cover debts: neither agree nor disagree	-0.0275	0.0410
Borrowing dimension		
Have you borrowed in the past 12 months	0.0608	0.0708
Have you taken goods on credit in the past 12 months	0.1500	0.1980
Do you owe money that has to be repaid	0.2039	0.1624
Reasons for borrowing: to purchase a motor vehicle	0.3102	0.1701
Reasons for borrowing: home loan, bond or mortgage to buy a house	0.3374	0.1454
Reasons for borrowing: educational or student loan	0.0979	0.0491
Saving dimension		
Reasons for saving(s) motivation: in case of an emergency or unplanned cost	0.2369	0.2395
Reasons for saving(s) motivation: provide for my family if I die	0.2536	0.2547
Reasons for saving(s) motivation: medical costs	0.1928	0.2185
Reasons for saving(s) motivation: retirement or old age	0.2613	0.3324
Reasons for saving(s) motivation: deposit on a house	0.0757	0.0994
Reasons for saving(s) motivation: funeral costs	0.1708	0.1633
Planning dimension		
Household contents or possessions insurance	0.3395	0.2981
Income or salary cover	0.2116	0.2408
Life insurance or life cover	0.3631	0.3707
Have a pension fund, provident fund or retirement annuity	0.3467	0.3949
Dealing with finances is stressful and a real burden: agree	0.0030	-0.1004
Dealing with finances is stressful and a real burden: neither agree nor disagree	0.0048	0.1874
Ensured you are financially secure: agree	0.1734	0.2087
Ensured you are financially secure: neither agree nor disagree	-0.0516	-0.0791
Proportion of variation explained by the first principal components	14.39%	11.52%

insurance, life insurance or life cover, as well as having a pension fund, provident fund or retirement annuity. Furthermore, about 14% of the variation was explained by the first principal components in 2011 but this proportion declined to 11% in 2016.

As presented in Table 4, the 2 × 2 matrices illustrate the relationship between FI and FH status. The first half of the table shows the row totals, and it can be seen that for those who were financially included in 2011, slightly above three quarters (75.6%) of them enjoyed good FH. The corresponding proportion increased to approximately 80% in 2016. On the other hand, when it comes to the financially excluded individuals, 65% of them suffered poor FH in 2011 and this share increased to 68% in 2016.

The second half of the table rather presents the cell totals. In 2011, 45.4% of the sampled individuals were financially included and enjoyed good FH, and this share rose by more than 10 percentage points to 56.6% in 2016. In contrast, the proportion of people who were both financially excluded and suffered poor FH dropped from 26.1% to 19.9%.

In Table 5, the survey participants were divided into four groups: (1) financially excluded and poor FH (most disadvantaged group), (2) financially excluded and good FH, (3) financially included and poor FH, and (4) financially included and good FH (most privileged group).

TABLE 4: 2 × 2 matrices on the relationship between financial inclusion and financial health statuses (%).

Dimension	Good financial health	Poor financial health	
Row totals			
2011			
Financially included	75.63	24.37	100.00
Financially excluded	34.72	65.28	100.00
	60.00	40.00	100.00
2016			
Financially included	79.67	20.33	100.00
Financially excluded	31.56	68.44	100.00
Total	**65.71**	**34.29**	**100.00**
Cell totals			
2011			
Financially included	45.36	14.62	59.98
Financially excluded	13.89	26.13	40.02
	59.25	40.75	100.00
2016			
Financially included	56.55	14.43	70.98
Financially excluded	9.16	19.86	29.02
Total	**65.71**	**34.29**	**100.00**

The percentage of people in each group by various personal and geographical characteristics is shown in Table 5.

The results in the table suggest that the proportion of people belonging to the most vulnerable group (I) was relatively great and were those under the following parameters: 16–25 year olds, Africans, individuals with no or primary education, unemployed or inactive, single or unmarried people, rural residents, well as people living in Eastern Cape, Free State and Limpopo. In contrast, the share of people who belonged to the most privileged group (IV) was higher for people possessing the following characteristics: 26–45 year olds, whites, people who attained vocational or tertiary education, employed individuals, as well as urban residents from the Western Cape and Gauteng provinces. This finding is consistent with the study conducted by (Brüggen et al. 2017), where the researchers found that more affluent segments of the population ranked higher than poorer segments on these measures.

Econometric findings

The results of the bivariate probit regressions on FI and good FH likelihoods are shown in Table 6. Firstly, compared with the eldest 56–65 years cohort, people from the other four age cohorts were less likely to be financially included and also less likely to have good FH; however, both results were statistically significant only in 2011. After controlling for differences in other characteristics, females, in general, were significantly more likely to be financially included and enjoyed good FH.

Compared with the white individuals, people from the other three population groups were associated with significantly lower FI and FH probabilities. However, unemployed and inactive people were also related to significantly lower FI and FH likelihoods compared with the reference category (employed). Moving on to the educational attainment dummy variables, compared with those with tertiary qualifications, the three lowest education categories (none, primary and secondary) were associated with significantly lower FI and FH likelihoods.

Looking at the other results, it is interesting to note that compared with the married individuals, those who were single or never married suffered significantly lower FI and FH probabilities. Finally, whilst the results by province were somewhat mixed (with many provincial dummy variables being statistically insignificant, compared with the Western Cape reference category), it is peculiar that after controlling for differences in other characteristics, rural residents were associated with significantly greater FI and FH likelihoods in 2011 but the opposite took place in 2016.

Finally, probit regressions on the good FH likelihood were conducted as shown in Table 7 by including the FI dummy as an additional explanatory variable. Holding other variables constant, the FI dummy was positive and statistically significant. In fact, the marginal effects indicated that after controlling for differences in other characteristics, sampled individuals who were financially included were nearly 30% significantly more likely to enjoy good FH in 2011. This marginal effect was also significant and increased further to 36% in 2016.

The empirical findings indicated that the share of people who were both financially included and enjoyed good FH increased from 45% to 57%. This most privileged group of people was more likely to possess the following characteristics: middle-aged (36–45 years), white male employed with vocational or tertiary educational qualifications, living in the urban areas of Gauteng and Western Cape provinces. In contrast, for those who were financially excluded and suffered poor FH, they were unemployed or inactive Africans with no or low levels of educational attainment, and lived in rural areas of Eastern Cape, Free State and Limpopo. Furthermore, the econometric findings suggested that FI was positively and significantly associated with greater probability of enjoying good FH. The econometric findings, therefore, prove the alternative hypothesis (H_2) that demographic factors, contextual factors and FI have an impact on FH, and prove alternative hypothesis (H_3) that there is a co-joint effect between FI and FH

Limitations

The limitation of the study is that it did not demonstrate any case of individuals being financially excluded despite enjoying good FH, as this may be relevant to black, rural communities.

Conclusion

This is the first South African study that comprehensively examined FI and FH, as well as their relationship (if any) by analysing the 2011 and 2016 FinScope data. This study has developed a basis for a better understanding of factors

TABLE 5: Profile of people by financial inclusion and financial health statuses.

Dimension	2011					2016				
	(I)	(II)	(III)	(IV)		(I)	(II)	(III)	(IV)	
Age cohort (years)										
16–25	40.34	20.15	12.45	27.06	100.00	21.15	7.82	15.49	55.53	100.00
26–35	21.53	8.79	19.03	50.65	100.00	18.22	8.54	11.71	61.53	100.00
36–45	17.95	10.70	13.82	57.54	100.00	19.49	12.52	11.41	56.58	100.00
46–55	21.97	14.26	14.51	49.27	100.00	19.30	7.75	21.54	51.41	100.00
56–65	15.45	13.95	11.12	59.48	100.00	21.46	13.80	15.66	49.09	100.00
Race										
African people	29.40	15.56	15.55	39.48	100.00	22.33	10.62	15.29	51.76	100.00
Mixed race people	22.37	13.15	16.50	47.99	100.00	22.63	8.46	18.74	50.17	100.00
Indian and/or Asian people	21.38	8.27	7.18	63.18	100.00	17.25	5.12	13.51	64.11	100.00
White people	5.25	3.00	7.49	84.25	100.00	3.78	2.19	6.17	87.87	100.00
Gender										
Male	27.12	11.90	14.22	46.76	100.00	20.17	7.28	11.65	60.91	100.00
Female	25.22	15.71	14.99	44.08	100.00	19.60	10.74	16.77	52.88	100.00
Educational attainment										
No formal education	36.53	29.80	10.79	22.88	100.00	48.65	10.58	7.17	33.59	100.00
Primary education	40.55	24.16	12.01	23.28	100.00	42.41	17.69	21.35	18.55	100.00
Secondary education	27.66	13.76	16.16	42.42	100.00	19.50	9.38	15.62	55.50	100.00
Vocational/Specialised/Other	10.11	7.01	8.40	74.49	100.00	0.00	5.63	1.69	92.68	100.00
Tertiary education	5.52	3.38	10.09	81.01	100.00	0.68	0.51	4.32	94.49	100.00
Labour market status										
Employed	10.54	5.38	13.60	70.49	100.00	11.69	5.51	12.34	70.47	100.00
Unemployed	40.69	16.91	17.93	24.47	100.00	42.94	16.90	14.93	25.23	100.00
Inactive	33.84	24.25	12.20	29.70	100.00	21.55	12.15	19.56	46.74	100.00
Marital status										
Married/living together	16.00	10.60	14.27	59.13	100.00	13.23	8.72	11.98	66.07	100.00
Divorced/separated	16.91	12.29	17.26	53.54	100.00	11.32	5.95	5.00	77.72	100.00
Widowed	18.04	18.05	12.99	50.92	100.00	22.24	10.97	18.76	48.04	100.00
Single/never married	33.46	15.66	14.81	36.06	100.00	26.14	9.42	16.48	47.97	100.00
Geotype										
Urban	20.26	11.69	14.65	53.40	100.00	15.74	7.54	13.90	62.82	100.00
Rural/tribal	37.90	18.31	14.56	29.23	100.00	30.84	13.48	15.84	39.84	100.00
Province										
Western Cape	16.03	10.31	14.32	59.34	100.00	16.21	6.95	14.94	61.89	100.00
Eastern Cape	31.16	14.19	18.35	36.30	100.00	29.60	6.09	19.33	44.97	100.00
Northern Cape	26.71	10.06	23.71	39.52	100.00	26.55	10.46	21.61	41.38	100.00
Free State	31.15	15.30	10.17	43.37	100.00	31.67	10.37	15.29	42.66	100.00
KwaZulu-Natal	31.90	17.26	11.81	39.03	100.00	14.25	7.71	15.00	63.03	100.00
North West	37.25	7.94	18.29	36.52	100.00	24.38	17.22	15.46	42.94	100.00
Gauteng	15.29	11.13	13.33	60.25	100.00	12.04	7.87	10.10	69.99	100.00
Mpumalanga	34.03	15.14	15.43	35.13	100.00	21.02	12.47	13.52	52.99	100.00
Limpopo	28.35	19.90	16.49	35.25	100.00	29.34	12.07	16.31	42.28	100.00

Note: Group (I): Financially excluded; poor financial health; Group (II): Financially excluded; good financial health; Group (III): Financially included; poor financial health; Group (IV): Financially included; good financial health.

that influence the relationship between FI and FH, particularly FH, and people's capacity to experience economic security. The findings of this study pave the way for further research in future that can examine not only why individuals make the choices they do but also the personal, systemic as well as structural factors that enable or constrain opportunities.

The ethnic groups, educational attainment levels, as well as geography of the population appear to be the key fundamental features for FI in the South African context. Presumptively, financial services uptake figures remained low for poorly educated Africans, considering that many of them reside in rural settings. Financial education should be provided in a more nuanced way to target the specific financial literacy needs of mainly Africans in rural settings. Promotion of FI is through consumer financial education as financial consumer education ensures the sustainability of FI. Policymakers can roll out campaigns that help create awareness about the benefits and risks of using different financial products and services as well as distribution channels to meet certain financial needs (FSCA 2020).These findings prove the formedalternative hypothesis (H_1), where demographic factors and contextual factors have an impact on FI.

The policy implications from the findings are that FI, as measured in terms of bank account ownership, does not create a significant problem in South Africa. However, authorities can improve formal account ownership by tacking barriers related to demographic characteristics, which are all

TABLE 6: Bivariate probit regressions on good financial health and financial inclusion likelihoods.

Dimension	Coefficient			
	Financial inclusion		Good financial health	
	2011	2011	2016	2016
Age cohort (years)				
16–25 years	-0.5033***	-0.2887	-0.8540***	-0.1417
26–35 years	-0.4741***	-0.1345	-0.4716***	-0.1301
36–45 years	-0.2858**	-0.0642	-0.4449***	-0.1781
46–55 years	-0.3236***	-0.1339	-0.4859***	0.2145
Gender				
Female	0.1973***	0.0509	0.2311***	0.1499**
Race				
African people	-0.5574***	-0.3426***	-0.6915***	-0.4045***
Mixed race people	-0.5101***	-0.5520***	-0.6539***	-0.5583***
Indian and/or Asian people	-0.4585**	-0.8152 ***	-0.6834***	-0.8429***
Educational attainment				
None	-0.6609***	-1.4133***	-1.5888***	-2.1038***
Primary	-0.8134***	-1.5484***	-1.6821***	-2.0023***
Secondary	-0.5153***	-0.9408***	-0.9083***	-1.2969***
Other/vocational	0.0297	0.4046	-0.3370	-0.6516
Labour market status				
Unemployed	-0.7358***	-0.6399***	-0.9875***	-0.9826***
Inactive	-0.5694***	-0.4317***	-1.1521***	-0.5814***
Marital status				
Divorced/separated	-0.1008	0.2143	-0.0797	0.0242
Widowed	0.0925	-0.0747	0.0916	0.0585
Single/never married	-0.1478**	-0.4083***	-0.2555***	-0.3242***
Province				
Eastern Cape	-0.0737	-0.2693**	0.0713	0.0413
Northern Cape	-0.3127***	-0.2709**	0.0395	-0.1331
Free State	0.0282	-0.2741*	-0.1885	-0.3337**
KwaZulu-Natal	-0.0570	0.2374*	-0.2519**	0.3446**
North-West	-0.3449***	-0.0581	-0.2478	-0.2115
Gauteng	0.1306	0.2490**	0.0079	0.0863
Mpumalanga	-0.1088	0.1080	-0.1004	-0.0021
Limpopo	0.1138	-0.0668	0.1517	0.0848
Geotype				
Rural	0.1733**	-0.0494***	0.3461***	-0.3114***
Constant	1.9066***	2.2517***	2.9057***	2.8667***
Sample size	3499	3499	3499	3153
Chi-squared statistic	753.80	697.66	753.80	697.66
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000

***, Significant at 1%; **, Significant at 5%; *, Significant at 10%.

TABLE 7: Probit regressions on good financial health likelihood, with financial inclusion status as an additional explanatory variable.

Dimension	Marginal effect	
	2011	2016
Age cohort (years)		
16–25	-0.1174**	-0.0906
26–35	-0.1506***	-0.0329
36–45	-0.0743	0.0004
46–55	-0.0849*	-0.0782
Gender		
Female	0.0577**	0.0009
Race		
African people	-0.1631***	-0.0878**
Mixed race people	-0.1616***	-0.1650***
Indian and/or Asian people	-0.1362*	-0.2433***
Educational attainment		
None	-0.1296	-0.3715***
Primary	-0.1834***	-0.4369***
Secondary	-0.1368***	-0.2338***
Other/vocational	0.0328	0.1482
Labour market status		
Unemployed	-0.2014***	-0.1227***
Inactive	-0.1182***	-0.1008**
Marital status		
Divorced/separated	-0.0347	0.0727
Widowed	0.0264	-0.0371
Single/never married	-0.0359	-0.1198***
Province		
Eastern Cape	-0.0353	-0.1099**
Northern Cape	-0.1334***	-0.0932*
Free State	0.0302	-0.0649
KwaZulu-Natal	0.0025	0.0498
NorthWest	-0.1394***	0.0069
Gauteng	0.0524	0.0819**
Mpumalanga	-0.0327	-0.0412
Limpopo	0.0308	-0.0359
Geotype		
Rural	0.0352	0.0182
Financially included	0.2967***	0.3622***
Sample size	3499	3153
Pseudo R-squared	0.1813	0.2414
Observed probability	0.5925	0.6571
Predicted probability	0.6169	0.7049
Chi-squared statistic	507.70	539.66
Prob. >chi-squared statistic	0.0000	0.0000

***, Significant at 1%; **, significant at 5%; *, significant at 10%.

impactful in the long-term. Many people do not fully derive benefits from the available financial products and services. These individuals are, however, gaining access to financial services rapidly through innovative financial products (e.g. mobile phone applications), which leverage technology and enable financial institutions to reach out to customers in remote areas in a more cost-effective and secure way (National Treasury 2020).

From the policy perspective, expanding affordable, reliable internet connectivity has the potential to expand access to financial products and services to underserved individuals which could boost FI. With internet access, smartphones and computers, particularly in rural areas dilute any negative effects from the lack of formal financial products and services. In other words, a person can make transactions via a computer or smartphone, regardless of whether a branch is located near them, thus improving FI (Friedline, Despard & Birkenmaier, 2018). They have the potential to contribute to the expansion of financial products and services by serving the unserved and underserved individuals, at low cost, and in efficient, reliable and safe manners that meet their needs (Claessens & Rojas-Suarez 2016).

As a component of FH, an improved understanding of FH helps contribute to how we address SOC and economic security. Current attempts to aggregate broad economic and economic factors, particular policies (FI) and individual behaviours, attitudes and skills into one construct are, however, underdeveloped (Bowman et al. 2017).

As a steppingstone, policymakers can begin consistent measurement of FH, which demonstrates whether and how people are actively benefitting from their relationship

with the financial system; and for this purpose, it provides information on perceptions beyond the conventional socio-economic indicators and complements data on access, use, quality and welfare of financial products and services. Information accumulated from examining FH offers insights into numerous aspects of financial lives that require support or offer opportunities for financial services (Rhyne 2020). When combined with data on the above-mentioned four dimensions, FH measures indicate whether broad trends in FI are associated with improvements in FH. They can also lead to discussions amongst policymakers across the range of welfare concerns, as they reveal the interrelatedness of the broad spectrum of policies that create an environment in which individuals conduct their financial lives.

Last but not the least, the study recommends that future research should support technological innovation that enables FI. In the current era of the Fourth Industrial Revolution, increasing digital innovation had led to the emergence of new financial products and services as well as new delivery channels. Both of them have the potential to contribute to the increase of FI and FH by addressing the needs of unserved and underserved segments of the population.

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Authors' contributions

N.N. is the main author as the manuscript is converted from her Master's full thesis. J.S is the main supervisor of the thesis, whilst D.Y. is the co-supervisor.

Ethical considerations

This study followed all ethical standards for research without direct contact with human or animal subjects.

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Appendix 1

TABLE 1-A1: Description of data on the access dimension of financial inclusion (%).

Dimension	2011	2016
Overall banking status		
Have a bank account or bank card	62.61	84.17
Used to have a bank account or card in the past	3.98	4.81
Do not have a bank account or card	33.42	11.02
Total	100.00	100.00
Reason: never had or used to have a bank account or card: Do not have an ID		
Yes	2.25	0.38
No	97.75	99.62
Total	100.00	100.00
Reason: never had or used to have a bank account or card: Do not have proof of residence		
Yes	1.93	0.15
No	98.07	99.85
Total	100.00	100.00
Reason: never had or used to have a bank account or card: Have access to someone else's account		
Yes	2.11	0.19
No	97.89	99.81
Total	100.00	100.00
Reason: never had or used to have a bank account or card: Find the language confusing		
Disagree	33.46	36.53
Neither agree nor disagree	25.30	4.50
Agree	41.24	58.97
Total	100.00	100.00
Reason: never had or used to have a bank account or card: Too expensive to have an account		
Yes	2.93	0.81
No	97.07	99.19
Total	100.00	100.00
Reason: never had or used to have a bank account or card: Unemployed or retrenched		
Yes	30.64	6.32
No	69.36	93.68
Total	100.00	100.00
Reason: never had or used to have a bank account or card: still a student		
Yes	17.43	0.01
No	82.57	99.99
Total	100.00	100.00
Reason: never had or used to have a bank account or card: prefer working with cash		
Yes	15.17	0.89
No	84.83	99.11
Total	100.00	100.00
Reason: never had or used to have a bank account or card: bank is too far		
Yes	1.55	0.10
No	98.45	99.90
Total	100.00	100.00

ID, identity.

TABLE 2-A1: Description of data on the usage dimension of financial inclusion (%).

Dimension	2011	2016
Use a bank account or bank card		
Yes	60.04	71.37
No	39.96	28.63
Total	100.00	100.00
Currently save or put money away		
Yes	24.70	53.04
No	75.30	46.96
Total	100.00	100.00
Have an insurance policy		
Yes	17.64	24.83
No	82.36	75.17
Total	100.00	100.00
Use overdraft facility		
Yes	2.98	3.77
No	97.02	96.23
Total	100.00	100.00
Borrowed in the past year		
Yes	34.99	12.71
No	65.01	87.29
Total	100.00	100.00
Have a credit or store card		
Yes	5.71	10.75
No	94.29	89.02
Total	100.00	100.00
Have a bank loan		
Yes	11.07	10.98
No	88.93	89.02
Total	100.00	100.00
Have a funeral policy offered by a bank		
Yes	10.19	12.15
No	89.81	87.85
Total	100.00	100.00
Funeral cover usage		
Yes	36.67	55.74
No	63.33	44.26
Total	100.00	100.00
Have medical aid or medical expenses		
Yes	8.29	9.77
No	91.71	90.23
Total	100.00	100.00
Have a retirement or pension fund		
Yes	15.98	19.24
No	84.02	80.76
Total	100.00	100.00

TABLE 3-A1: Description of data on the quality dimension of financial inclusion (%).

Dimension	2011	2016
Reasoning: never had or used to have a bank account or card: do not understand how banks work		
Yes	1.99	0.12
No	98.01	99.88
Total	100.00	100.00
Reasoning: never had or used to have a bank account or card: do not feel comfortable in a bank		
Yes	0.90	0.12
No	99.10	99.88
Total	100.00	100.00
Reasoning: never had or used to have a bank account or card: do not understand technology		
Yes	1.27	0.19
No	98.73	99.81
Total	100.00	100.00
Reasoning: never had or used to have a bank account or card: do not qualify to open an account		
Yes	4.31	0.55
No	95.69	99.45
Total	100.00	100.00

TABLE 4-A1: Description of data on the welfare dimension of financial inclusion (%).

Dimension	2011	2016
Own a cell-phone		
Yes	96.08	85.83
No	3.92	14.17
Total	100.00	100.00
Have internet facility at home		
Yes	93.35	95.21
No	6.65	4.79
Total	100.00	100.00
Have a computer at home		
Yes	87.32	87.74
No	12.68	12.26
Total	100.00	100.00
Ensured you are financially secure		
Agree	35.33	30.40
Neither agree nor disagree	25.81	11.27
Disagree	38.85	58.33
Total	100.00	100.00
Dealing with personal finances is stressful and a real burden		
Agree	52.68	45.29
Neither agree nor disagree	25.04	33.98
Disagree	22.28	20.73
Total	100.00	100.00
Like to be in control of finances and money matters		
Agree	67.60	42.62
Neither agree nor disagree	20.56	35.66
Disagree	11.85	42.24
Total	100.00	100.00

TABLE 5-A1: Description of data on the spending dimension of financial health (%).

Dimension	2011	2016
You often miss or make late payments for things like rent or municipality bills or loan repayments		
Agree	21.47	14.01
Neither agree nor disagree	19.19	21.69
Disagree	59.34	64.30
Total	100.00	100.00
You frequently have problems making ends meet		
Agree	36.58	28.03
Neither agree nor disagree	22.15	35.03
Disagree	41.27	36.93
Total	100.00	100.00
You have considered going to see someone to help you with your debt problems		
Agree	15.27	13.25
Neither agree nor disagree	13.81	17.74
Disagree	70.92	69.01
Total	100.00	100.00
You have considered cancelling policies to cover debts		
Agree	15.88	11.30
Neither agree nor disagree	16.13	19.47
Disagree	67.99	69.22
Total	100.00	100.00

TABLE 6-A1: Description of data on the borrowing dimension of financial health (%).

Dimension	2011	2016
Have you borrowed in the past 12 months?		
Yes	21.37	5.40
No	78.63	94.60
Total	100.00	100.00
Have you taken goods on credit in the past 12 months?		
Yes	5.38	8.33
No	94.62	91.67
Total	100.00	100.00
Do you owe money that has to be repaid?		
Yes	7.71	6.20
No	92.29	93.80
Total	100.00	100.00
Reasons you have borrowed in the past 12 months: to purchase a motor vehicle		
Yes	4.67	1.86
No	95.33	98.14
Total	100.00	100.00
Reasons you have borrowed in the past 12 months: home loan, bond, mortgage or to build		
Yes	5.23	1.42
No	94.77	98.42
Total	100.00	100.00
Reasons you have borrowed in the past 12 months: educational or student loan		
Yes	0.52	0.06
No	99.48	99.94
Total	100.00	100.00

TABLE 7-A1: Description of data on the saving dimension of financial health (%).

Dimension	2011	2016
Reasons for saving: in case of an emergency or unplanned cost		
Yes	14.21	28.15
No	85.79	71.85
Total	100.00	100.00
Reasons for saving: provide financial support to my family if I die		
Yes	4.98	8.05
No	95.02	91.95
Total	100.00	100.00
Reasons for saving: for medical expenses		
Yes	2.62	5.37
No	97.38	94.63
Total	100.00	100.00
Reasons for saving: retirement or old age		
Yes	3.33	8.38
No	96.67	91.62
Total	100.00	100.00
Reasons for saving: deposit on a house		
Yes	0.71	2.23
No	99.29	97.99
Total	100.00	100.00
Reasons for saving: Funeral cost		
Yes	3.40	10.72
No	96.60	89.28
Total	100.00	100.00

TABLE 8-A1: Description of data on the planning dimension of financial health (%).

Dimension	2011	2016
Household contents or possessions insurance		
Yes	8.52	7.73
No	91.48	92.27
Total	100.00	100.00
Income or salary cover (pays out if you get retrenched)		
Yes	1.69	6.24
No	98.31	93.76
Total	100.00	100.00
Life insurance or life cover		
Yes	17.31	21.07
No	82.69	78.93
Total	100.00	100.00
Have a pension fund, provident fund or retirement annuity		
Yes	15.98	19.24
No	84.02	80.76
Total	100.00	100.00
Dealing with finances is stressful and a real burden		
Agree	52.68	45.29
Neither agree nor disagree	25.04	33.98
Disagree	22.28	20.73
Total	100.00	100.00
Ensured you are financially secure		
Agree	35.33	30.40
Neither agree nor disagree	25.81	11.27
Disagree	38.85	58.33
Total	100.00	100.00